For the new contract term, Neustar is offering not only to sustain and enhance the reliable, scalable, secure, and neutrally administered service on which the Industry depends, but also to deliver an aggressive series of investments and innovations designed to address our customers' most critical strategic priorities. The NPAC/SMS has played a vital role in the positive impact technology innovation has had on the U.S. economy since the 1996 Telecommunications Act. Its future impact is likely to be even more profound, as the Industry embraces the challenges of IP network transformation, an explosion in connected devices, and a growing variety of diverse business models. By extending its successful partnership with Neustar today, the Industry can align its resources and focus its energies on tomorrow's objectives, with complete confidence in our continued partnership and performance.

# Value to Service Providers, Regulators, and Consumers

Although we rarely make headlines—or perhaps because we rarely make headlines—Neustar has long been a reliable partner for Service Providers in their endeavors to acquire and retain customers, roll out new products, evolve their networks, and comply with regulatory policy. The performance and security of the NPAC/SMS is essential to the accurate routing and rating of billions of calls and texts each day, and is unique worldwide in the exceptional value it offers the Industry and consumers:

- **Competitive Porting**—Over 30% of total churn in the U.S. involves number portability and thus relies upon the NPAC/SMS registry[1]—impacting tens of millions of consumers and over $40 billion in total subscriber contract value every year. Nearly half of all consumers report that if they could not take their telephone number with them, no amount of discounts could induce them to change Service Providers—making a high-performing NPAC/SMS absolutely essential to market competition and subscriber acquisition. U.S. consumers benefit from the fastest wireless porting experience in the world, and ours is one of the only platforms among 70 LNP-supporting countries to deliver fixed line, mobile, VoIP, and intermodal porting in a single central registry.

- **National Thousand-Block Pooling**—In 2002, National Pooling was introduced as an essential means to accommodate an exponential demand for telephone numbers, arising from wireless growth and telecom competition. National Pooling has increased the lifespan of the North American Numbering Plan by decades, preserving over 55,000 local exchange codes for future use by consumers. This is equivalent to 71 area codes, or over 500 million individual telephone numbers[2] saved. Pooling is relied upon by hundreds of competitive Service Providers across the country, for whom it is the only means of acquiring new telephone numbers to support consumer demand. National Pooling is unique to the U.S. market, and today represents approximately 24% of all U.S. telephone number inventory. Neustar successfully executes over 40,000 pooled block activations and updates each year with success rates that exceed 99.9%.

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[1] Calculated by comparing NPAC/SMS wireless inter-service provider activates with total voluntary churn figures reported by CTIA
[2] As reported by the North American Numbering Plan Administrator and Pooling Administrator

- **Network Management**—The NPAC/SMS also permits Service Providers to make real-time updates to their own networks, moving subscribers and devices between facilities or underlying technologies, to enable new services or reduce costs. Over 96 million telephone numbers have been added to the NPAC/SMS by their assigned Service Providers as a result of customer product upgrades, technology migrations, load balancing, and mergers & acquisitions. The ongoing move to all-IP infrastructure, which has driven billions of dollars of investment on the part of Service Providers, has already begun to leverage the NPAC/SMS's network-agnostic design to facilitate broad adoption and offer material cost savings to the Industry.

- **Disaster Recovery**—The NPAC/SMS provides an essential layer of redundancy and resiliency in Service Provider networks, thanks to its ability to reroute terminating call traffic away from damaged or destroyed facilities, in real-time and with minimal coordination. In the wakes of Hurricane Katrina and the September 11th attacks, Neustar worked with Service Providers, state regulators, and the FCC to restore the service of hundreds of thousands of consumers and businesses. Today, Service Providers rely upon the NPAC/SMS to maintain proactive disaster recovery plans for critical network infrastructure, ready to execute at a moment's notice.

- **Law Enforcement/Public Safety**—The LNPA is the only authoritative data source available to U.S. law enforcement and public safety agencies regarding telephone number assignment—including those related to pre-paid users and VoIP Service Providers. When an investigator needs to know where to direct a subpoena for telecom billing records, or an ambulance dispatcher needs to quickly correlate a telephone number data to a telecom billing address, they often begin with Neustar's services.

As we describe in our proposal, consumers and Service Providers rely on the LNPA to sustain market competition, preserve and assign numbering resources, and manage critical infrastructure. It is embedded in the day-to-day business operations for thousands of Industry constituents, and has become an institutional part of the way communications service is delivered in the United States.

### NPAC/SMS Facts and Figures

| | |
|---|---|
| Service Provider Accounts | 4,800+ |
| Mechanized Distribution Endpoints (LSMS) | 243 |
| Populated Routing, Rating, and Billing Data Elements | 5 billion + |
| Annual Interactions with Service Provider networks | 12 billion + |

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# Complex Infrastructure and Essential Services

The NPAC/SMS is the largest, fastest, and most complex number portability system in the world, processing over 14 times as many transactions, orders of magnitude faster than the next largest international platform[3]. The NPAC/SMS receives over 1.3 million real-time adds, modifies, and disconnections each and every day from Service Provider network operations and order management systems. Those requests then traverse a highly scalable and secure 5-layer system architecture, designed to deliver authoritative information to the country's many interconnected networks within seven seconds of the initial receipt. Information distributed by the NPAC/SMS is then relied upon to support the accurate routing and rating of voice calls and text messages for hundreds of millions of consumers, along with a variety of downstream operations such as revenue assurance and legal compliance. The complexity and scalability of the NPAC/SMS is a reflection of the technical and business diversity of the U.S. market, and the high expectations of U.S. consumers.
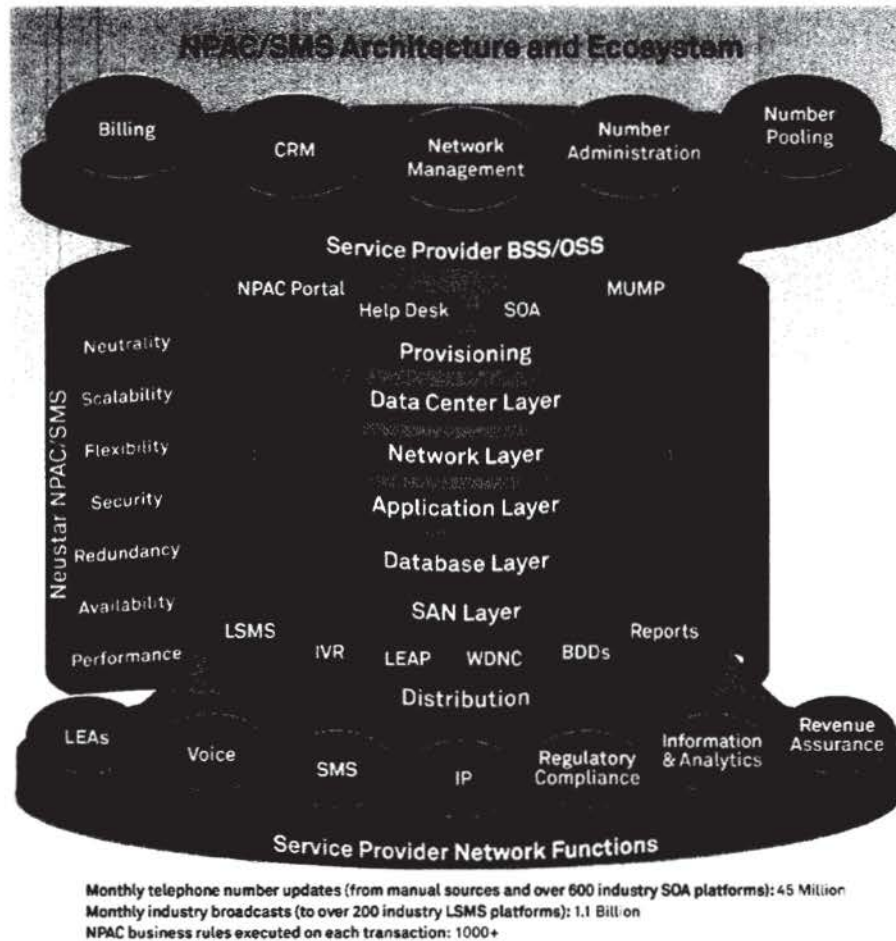


Monthly telephone number updates (from manual sources and over 600 industry SOA platforms): 45 Million
Monthly industry broadcasts (to over 200 industry LSMS platforms): 1.1 Billion
NPAC business rules executed on each transaction: 1000+

*Exhibit ES-1*

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3 India reports 32.7 million porting transactions between February '11 and January '12. During that same period, the NPAC/SMS processed over 468 million. In the U.S. consumers can change service providers within minutes; in India it can take up to seven days

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In addition to operating the NPAC/SMS registry, the LNP Administrator is relied upon each and every day to be a direct extension of Service Provider operations, a neutral focal point for Industry collaboration and cooperation, and a consultative source for regulators and policy officials. Neustar's team possesses a unique combination of knowledge and expertise, earned through years of day-to-day production experience with mission-critical activities, which no other vendor has or could hope to acquire in a reasonable timeframe. For example:

- Neustar **directly executes Service Providers' major porting projects**, including over 55,000 customer and network management projects in 2012, ensuring service continuity and accurate data for millions of subscribers

- Neustar routinely **organizes and leads innovation** and change management initiatives, facilitating Industry collaboration and consensus-building among a diverse set

# Neustar's LNP Administration



*Exhibit ES-2*

of Service Provider, technology vendor, and regulator constituents, leading to the development of Industry-wide standards and specifications for interoperability and compliance. This partnership in innovation has led to the evaluation, implementation and deployment of more than 380 nationwide Change Orders in the NPAC/SMS since 1997, delivered without disruption to thousands of NPAC Users throughout the U.S.

- We have developed and routinely executed the procedures for **simultaneous reassignments of numbering resources**, such as Service Provider Identifier (SPID) migrations and area code splits, which preserve numbering resources, enable network consolidations, and require the coordination and participation of hundreds of Service Providers and their partners.

- Neustar is a key **enforcer of Industry policy** regarding access to confidential and proprietary Service Provider information, offering support to Service Provider partners and non-telecom third parties while ensuring only proper use of NPAC/SMS data. To offer one example, Neustar currently serves over 1,600 telemarketers and credit/collections agencies in their requirements to comply with the Telephone Consumer Protection Act (TCPA), which forbids the use of auto-dialers when calling wireless phones.

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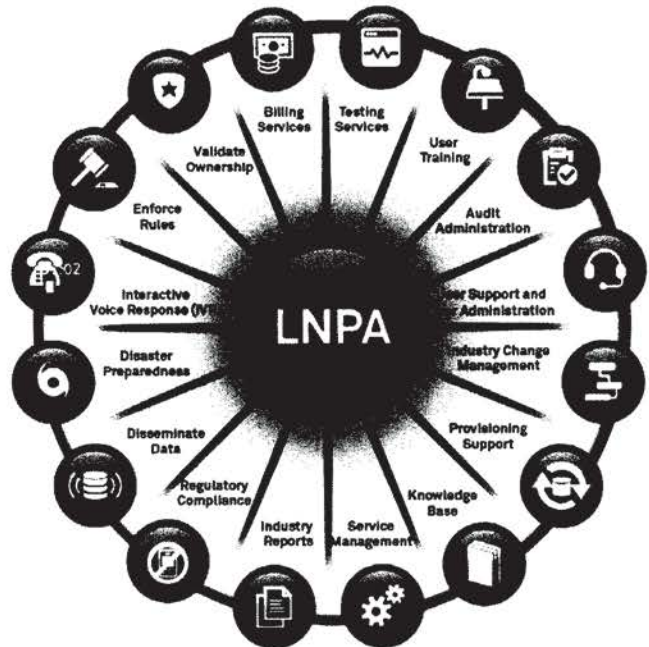
# A Record of Exceptional Performance

The communications industry evaluates Neustar against 2,268 individual service level measurements, a wide variety of external audits and regular certifications, and an annual NPAC User survey that polls all U.S. Service Providers on Neustar's accessibility and responsiveness. Across every single measure available, Neustar offers the highest levels of performance to Service Providers and consumers:

- **11,333 successfully met or exceeded service level measurements** over the last five years—a 99.94% success rate against Industry requirements.

- **A 3.84 out of 4 score across all categories** of our annual NPAC User survey in 2012, which measures each aspect of the LNPA Service for neutrality, responsiveness, accessibility, and the urgency with which we address customer needs.

- **Over 80% of first call resolution rate** by tier 1 help desk, delivering rapid resolution without escalations and handoffs.

- **Greater than 99.9% accuracy record** for the millions of manual network changes executed on behalf of Service Providers each year.

- **Zero material deficiencies, weaknesses, or non-conformities** for the last five years on all Industry standard and NAPM-requested audits.

- Security-Related Information

- **Zero complaints to the FCC** reported to Neustar from Service Providers or consumers regarding the LNPA's service, billing, or neutrality.
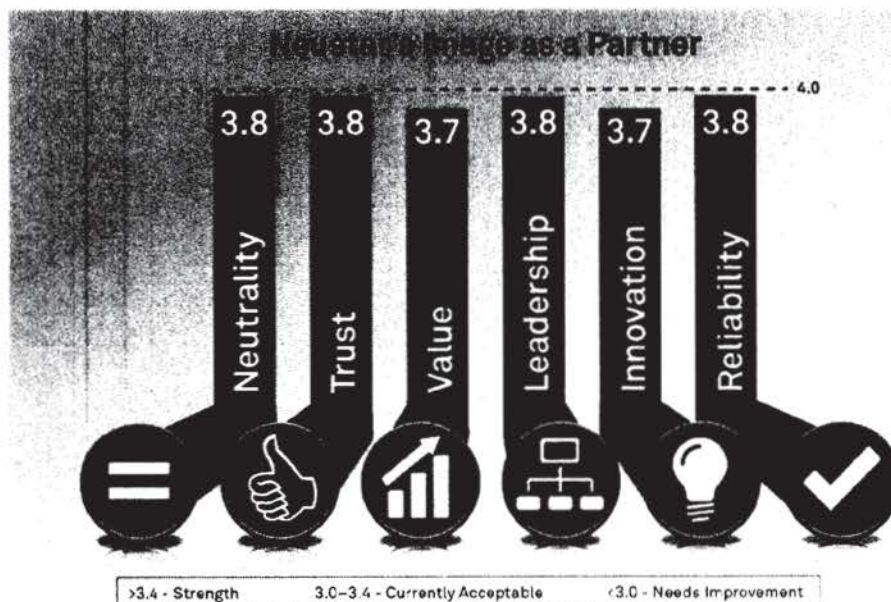


*Exhibit ES-3*

Neustar has established a tailored approach to LNPA service delivery that guarantees Service Providers and their consumers the very highest levels of stability and performance. Tasks like Industry change management, software development and deployment, customer certification, performance monitoring, root cause analysis, and security evaluation, are all custom-fit to the multifaceted and collaborative nature of LNP Administration, and are performed by dedicated experts with unique Industry experience. Because of the high level of Industry expertise required to provide the LNPA Service, **no part of our operation is outsourced to third parties and subcontractors, which offers Service Providers maximum accountability on Neustar's part.**

Neustar provides the Industry with peace of mind that stems from a level of trust and credibility second to none. We subject every aspect of the LNPA service to strict scrutiny and oversight, with a tailored combination of robust internal controls, frequent external audits and evaluations, and full transparency with the Industry and the FCC. As a global leader in Internet security evaluation and risk-mitigation, Neustar takes a proactive and predictive approach to assessing any potential weaknesses and threats to the systems and infrastructure, conducting regular audits, penetration tests, and performance evaluations under production conditions.

In the new contract term, the NAPM, LLC has mandated adherence to increased Service Level Requirements, which exceed the Industry's current, already-high standards for performance. Neustar enthusiastically endorses the new requirements and has proposed additional audits and certifications in reflection of Service Provider needs for the next decade. The Industry and the FCC can select Neustar in the confidence that our technical performance will remain unsurpassable, and will provide a solid foundation for the Industry's future needs.

## A Unique Role; a Unique Company to Fulfill It

Neustar was founded on, and designed in perfect alignment with, the values and characteristics necessary to administer Local Number Portability—neutrality, security, privacy, and performance. Our unique corporate capabilities and credentials all contribute to continued performance and innovation in the NPAC/SMS:

- Neustar is at the forefront of technology and market evolution, and delivers world-class services for customers across several Industry sectors. Neustar's experts currently lead or contribute to over 40 distinct organizations, consortia, and Industry forums focused on communications and the Internet, including Internet Engineering Task Force (IETF), the Global Systems for Mobile Communications Association (GSMA), and the FCC's Technical Advisory Council (TAC).

**What are customers saying about Neustar?**

The following is a selection of feedback from several of our most recent customer satisfaction surveys. The surveys assess Neustar's performance in the eyes of NPAC users across the communications market – from industry leaders and new entrants alike.

"Neustar and the NPAC have set a very high bar to exceed in terms of reliability, performance, and customer focus."

"While the employees are Neustar's greatest asset, the fact that Neustar has incorporated 'neutrality' into the mission of the job itself, and holds the employees accountable for it, by far sets Neustar high above the bar."

"My ONLY wish is that the standards set by Neustar would be followed by other vendors in the industry."

"We were given the responsibility of porting with very little knowledge of how it works. Over the last 5-6 years Neustar has taught me everything there is to know about SOA & porting. They are always so willing to help."

"Neustar help desk and personnel are the best that I deal with in the industry for prompt, friendly and efficient service."

"Any issue I have had concerning the use of NPAC has been met with a 'can do' attitude by Neustar employees. Swift action also seems to be the norm for your company."

"By far the best team I have worked with. Very professional and meets every need with a positive approach."

"Neustar always goes above and beyond the call of duty."

"I couldn't run my department without Neustar and the support I have in their knowledge."

- Neustar is a global leader in Internet security evaluation and risk-mitigation, incorporating leading security technologies and Industry best practices into all services offered to our customers. Neustar has developed its own tailored security framework, called NeuCIRT/SOC (Cyber Incident Response Team/Security Operations Center). Within Neustar's state-of-the-art NeuCIRT/SOC facility, analysts use customized and commercially available tools such as **NeuSentry,** a security intelligence capability that provides early warning of security threats and issues, and real-time monitoring for cyber events. Neustar is a recognized market expert in consumer privacy and cyber security, bringing to bear a combination of policy expertise and technical acumen to provide the highest possible confidence to our customers and to regulators.

- In addition to our Local Number Portability Administration services, Neustar is **the world's leading authoritative DNS services provider**, hosting services in over 40 international locations and consistently delivering high availability and low latency to thousands of customers worldwide. Neustar also operates one of the world's largest denial-of-service mitigation product—**SiteProtect**— offering reliable protection to enterprises against political or economic cyber attack. Neustar has developed advanced virtualization techniques to power **WebMetrics,** a website performance and monitoring service that is deployed in over 110 locations around the world.

- Building upon our experience as an operator of neutral third party services for diverse constituents, Neustar is also the administrator for **UltraViolet™**, the digital rights media platform that provides over 10 million registered consumers the "buy once, play anywhere" convenience for all their digital entertainment content. The UltraViolet™ ecosystem includes device manufacturers, retailers, and film & TV studios across the entertainment Industry. Neustar also provides directory services for the 5-digit and 6-digit number strings used for all **U.S. Common Short Codes (CSC).**

Neustar has been the perfect partner for Service Providers and the FCC, and commits to building on that partnership in the next term. Neustar is a U.S.-based and operated, publicly traded company, subject to all relevant SEC, FASB, and Sarbanes Oxley reporting requirements; this will continue to offer maximum transparency and stability to Serivce Providers and the FCC. Neustar has an outstanding credit rating and a strong balance sheet to absorb and manage unforeseen risks—and we have no litigation, pending or historical, with our current NPAC customers or with the U.S. government. We are also committed to the education and development of the next generation of U.S. technology engineers; as a result we support a variety of programs dedicated to promoting STEM-related learning and opportunity, including My Digital Life, which focuses on digital literacy education, and the Anita Borg Institute, which promotes opportunities for women in technology.

## The Trust of an Industry: Neustar's Neutrality

The LNPA is trusted to safeguard proprietary net-work data for millions of devices and consumers. It has the ability to impede or distort market competition through preferential treatment or biased operation. And it often holds the reins on the execution of critical network and policy evolutions, including IP interconnection and telephone number exhaust prevention. As a result, any degradation in neutrality—whether actual or perceived—can in an instant undermine confidence and erode the LNPA's value to consumers and the Industry

Neustar is the Industry and the FCC's most trusted resource for neutral administration services and consultation on telephone number-related issues. In addition to our role as the U.S. LNPA, we also currently serve the FCC and the Industry as the **North American Numbering Plan Administrator (NANPA)**, **National Pooling Administrator (PA)**—both of which, like the NPAC/SMS, consistently receive the highest marks for quality, user satisfaction, and neutrality. The trust placed in Neustar to operate these services is built on a series of unique foundations:

- Neustar operations since 1999 have been guided by a unique and proven **Code of Conduct**, developed in collaboration with the FCC and the Industry. The Code governs the stewardship of confidential information, forbids special preference or consideration to individual Service Providers or, by extension, Industry segments, and establishes clear limitations on Neustar board ownership, investors, and employees. The Code of Conduct drives Neustar's culture and reinforces the values of neutrality throughout the company.

- Neustar mandates that its employees and directors affirm their adherence to the Code of Conduct—including limitations on telecom investment and board participation—in **quarterly certifications,** and be trained and tested on the values and practices of neutrality once a year. We have established a **Neutrality Audit Committee**, and a position of **Neutrality Officer**, who together have the responsibility of assessing and ensuring Neustar's ongoing compliance with all tenets of the neutrality program.

# HIGHLY CONFIDENTIAL

- As a condition of the FCC and Industry's neutrality rules, Neustar engages in **constant evaluation of its investor base,** ensuring no entity with a 5% or greater share of the company is affiliated with a TSP.

- Neustar performs annual **Neutrality Audits** as the LNPA, and quarterly Audits as the NANPA and the PA, all of which include a certification submitted by Neustar's CEO on behalf of the company. The auditors verify all interactions between the LNPA, the Industry, and third party users such as Law Enforcement and telemarketing companies, to ensure that in every instance parties are treated with full impartiality. We are pleased to report that to date, Neustar has passed all ten LNPA Audits, and 50 quarterly NANPA/PA audits with zero deficiencies.

Neutrality remains an integral part of who we are—it even comprises part of our name. More than any other prospective vendor, Neustar has fully committed both to the letter and the spirit of the Industry and the FCC's requirements. We are not beholden to a parent company with other interests in number administration or network management, and we do not rely upon subcontractors whose neutrality could impact the work of the LNPA. By selecting Neustar for the next term, the Industry and the FCC ensure continued confidence that the LNPA's neutrality will remain paramount.

## Added Value for the Next Generation LNPA

Neustar's proposal for the next term includes continued investments into virtually all aspects of the LNPA service, available on the first day of the new contract at no incremental cost. We will deliver a new NPAC User Portal to provide consolidated access to essential data and functionality, expanded service options including a 24x7x365 help desk, application automations to exceed system availability and throughput requirements, and additional testing, connectivity and security options for our customers. We have also committed to each of the RFP's requirements related to in-flight and near-future change orders, in keeping with Neustar's proven ability to introduce change without disruption. These enhancements will provide the Industry with the operational flexibility to accommodate growing transaction volumes, changes in underlying network technology, and ongoing policy adjustments—just as we have since we began serving as the LNPA in 1997.

In addition, Neustar is proposing a series of opportunities for future NPAC innovation4, each building on the NPAC/SMS's unique position within the telecommunications ecosystem, and designed to address the communications industry's strategic challenges and opportunities. By the time the next LNPA contract term begins in 2015, there will be another 174 million telephone-number addressable devices connected to telecom networks—handsets, smartphones, and machine-to-machine endpoints. By 2020, the Industry will have reached critical mass on the full transition to IP networks, with another 500 million traditional and machine-to-machine devices in service. At the present time, Neustar is actively engaged with Service Providers and the FCC in the definition and implementation of the next decade's number administration requirements. We look forward to continuing to deliver our unique insight to the Industry in the next term.

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4 Neustar's proposals for NPAC/SMS evolution are designed to be evaluated by the LNPA Working Group and the NAPM, LLC at the appropriate time. Each of our proposed enhancements is included in our proposal, and is built on the NPAC/SMS's secure, reliable, and nationwide foundation.
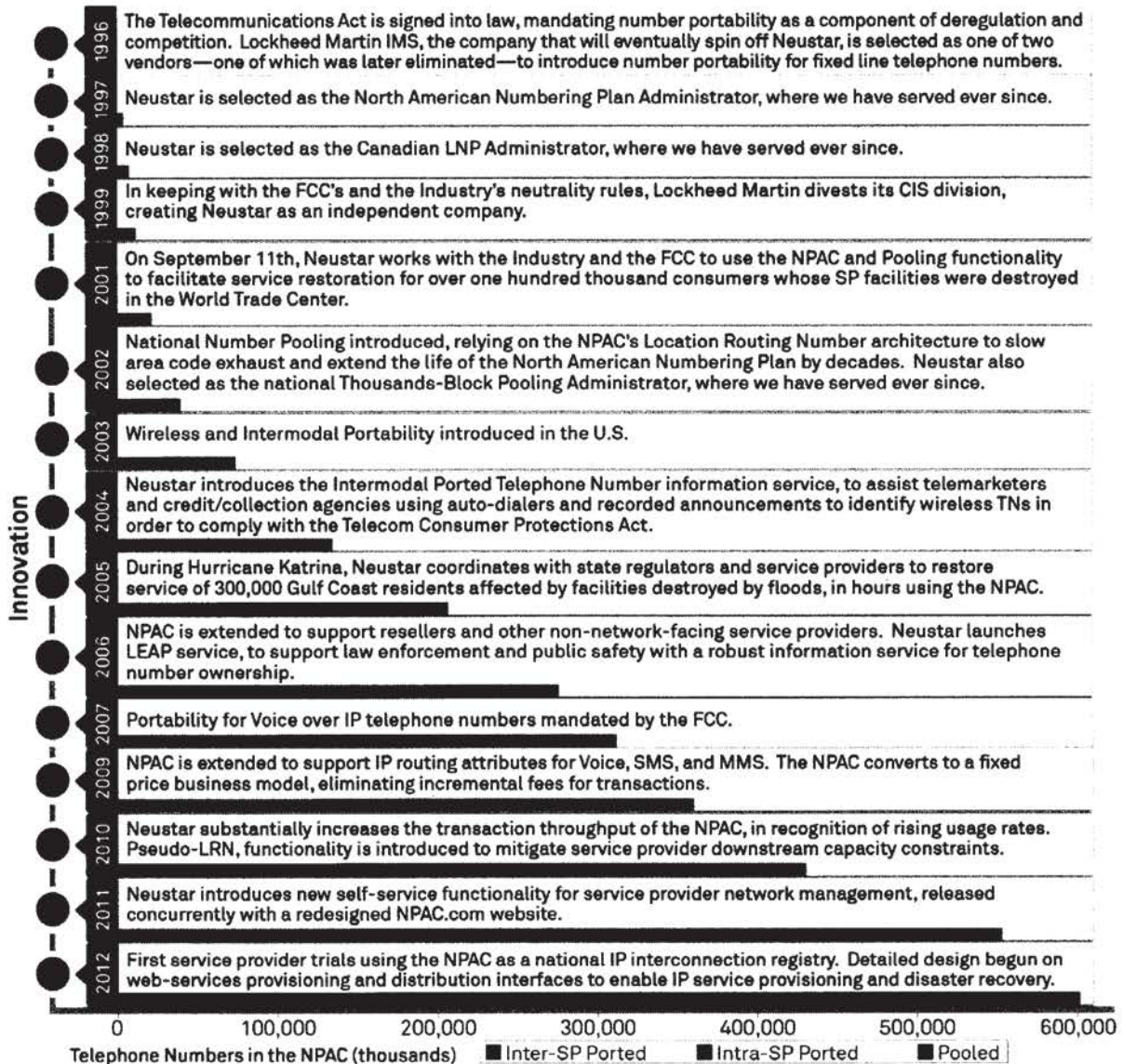
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## Growth and Innovation in the NPAC

**1996** — The Telecommunications Act is signed into law, mandating number portability as a component of deregulation and competition. Lockheed Martin IMS, the company that will eventually spin off Neustar, is selected as one of two vendors—one of which was later eliminated—to introduce number portability for fixed line telephone numbers.

**1997** — Neustar is selected as the North American Numbering Plan Administrator, where we have served ever since.

**1998** — Neustar is selected as the Canadian LNP Administrator, where we have served ever since.

**1999** — In keeping with the FCC's and the Industry's neutrality rules, Lockheed Martin divests its CIS division, creating Neustar as an independent company.

**2001** — On September 11th, Neustar works with the Industry and the FCC to use the NPAC and Pooling functionality to facilitate service restoration for over one hundred thousand consumers whose SP facilities were destroyed in the World Trade Center.

**2002** — National Number Pooling introduced, relying on the NPAC's Location Routing Number architecture to slow area code exhaust and extend the life of the North American Numbering Plan by decades. Neustar also selected as the national Thousands-Block Pooling Administrator, where we have served ever since.

**2003** — Wireless and Intermodal Portability introduced in the U.S.

**2004** — Neustar introduces the Intermodal Ported Telephone Number information service, to assist telemarketers and credit/collection agencies using auto-dialers and recorded announcements to identify wireless TNs in order to comply with the Telecom Consumer Protections Act.

**2005** — During Hurricane Katrina, Neustar coordinates with state regulators and service providers to restore service of 300,000 Gulf Coast residents affected by facilities destroyed by floods, in hours using the NPAC.

**2006** — NPAC is extended to support resellers and other non-network-facing service providers. Neustar launches LEAP service, to support law enforcement and public safety with a robust information service for telephone number ownership.

**2007** — Portability for Voice over IP telephone numbers mandated by the FCC.

**2009** — NPAC is extended to support IP routing attributes for Voice, SMS, and MMS. The NPAC converts to a fixed price business model, eliminating incremental fees for transactions.

**2010** — Neustar substantially increases the transaction throughput of the NPAC, in recognition of rising usage rates. Pseudo-LRN, functionality is introduced to mitigate service provider downstream capacity constraints.

**2011** — Neustar introduces new self-service functionality for service provider network management, released concurrently with a redesigned NPAC.com website.

**2012** — First service provider trials using the NPAC as a national IP interconnection registry. Detailed design begun on web-services provisioning and distribution interfaces to enable IP service provisioning and disaster recovery.

*Innovation* (vertical axis label)

x-axis: 0 — 100,000 — 200,000 — 300,000 — 400,000 — 500,000 — 600,000

Telephone Numbers in the NPAC (thousands)  ■ Inter-SP Ported  ■ Intra-SP Ported  ■ Pooled

*Exhibit ES-4*

Neustar proposes working with Service Providers and regulators to provide the following additional LNPA services in the new contract term, at no additional charge:

- **National IP Interconnection:** In 2012 Neustar conducted the Industry's first proof-of-concept trials using the NPAC/SMS's Voice URI capability to perform national IP interconnection services, with the Industry's largest Service Providers and third party technology vendors.

- The NPAC/SMS will provide the tools necessary for the administration, assignment, and interoperability of **non-geographic and machine-to-machine telephone numbers,** which are expected to rise to over 500 million by 2020.

- The NPAC/SMS will support **the dynamic provisioning and distribution of IP endpoints on next generation carrier networks,** reacting in real time to subscriber behavior, and saving fixed-line and wireless Service Providers hundreds of millions of dollars in network build-out costs and optimal least-cost routing.

- Neustar will establish a **certificate authority** to enable secure, reliable authentication of telephone-number based network provisioning and distribution over the Internet—providing a critical layer of safety and security for next generation telecom service.

- We will support implementation of a common **stolen equipment registry** for smartphones and other handsets, to further support reliable information exchange and compliance with related regulatory requests.

- Neustar will provide access for all NPAC/SMS Users to our proprietary and award-winning **information and analytics engine, ElementOne (E1).** The E1 architecture provides a powerful and user-friendly mechanism to assemble and visualize a Service Provider's NPAC/SMS data, leading to better business decisions regarding network capacity and allocations, resource assignment, and subscriber retention and acquisition.

Neustar has described these innovations and more within our proposal, and included a series of white papers that provide additional detail. The proposed innovations remove the need to develop and deploy new standalone solutions, instead leveraging the NPAC/SMS's existing interfaces and saving significant costs. Additional benefits will include reduced fraud and abuse, optimized network planning and configuration, and additional revenue streams for the communications industry. Use of the NPAC/SMS's reliable and recognized technology and procedures will accelerate adoption of Industry-wide standards, further supported by Neustar's guarantees of neutrality and permitted use enforcement. Most importantly, extending Neustar's contract as the LNPA permits the Industry and the FCC to take advantage of these opportunities immediately, rather than expend energy and focus its capital resources on the monumental task of replicating Neustar's current performance with one or more new vendors.

# All Reward and No Risk

Proven performance within a complex multifaceted environment. Unassailable neutrality and corporate credentials. Committed investments to support the Industry's most critical requirements. Neustar offers all this and more to an Industry undergoing significant market and technological change over the next decade. This proposal represents a choice for the Industry and the FCC—build on today's success to focus on future priorities, or try to replicate the present at enormous risk and expense.

Transitioning the NPAC/SMS registry in the United States to a new vendor would be an endeavor without precedent in scope or complexity, and would be fraught with consumer risk, notwithstanding the best of intentions and rigorous planning on the part of Service Providers and prospective vendors. There are no existing methods or procedures to execute an LNPA transition; it would require a level of Industry alignment that surpasses even the most complex LNP architecture planning (e.g. NPAC/SMS multi-vendor peering). Once the Industry groups and regulators have incurred the expense of developing and agreeing to a transition plan, hundreds of service providers would then be required to comply with a fixed and very aggressive schedule, with no current governance model to address delays or issues. Perhaps most importantly, the cost and risk of a transition will fall most heavily on the Service Providers who use the NPAC/SMS the most—i.e. new entrants and smaller Service Providers with the majority of their telephone number inventories already in the NPAC/SMS.

Any new vendor in this environment—by definition—would be learning on the job. A new LNPA vendor would have to mitigate against a near certainty of data corruption, errors or delays in essential network updates, a staff that lacks the expertise to perform critical Industry tasks, allegations or perceptions of non-neutrality, and non-uniform consumer experiences across the U.S. A leading economics research firm with a specialty in telecommunications, Navigant, Inc., has quantified the potential costs and risks to Service Providers of NPAC/SMS transition at over $719 million in the first year alone[5]. The analysis uses a conservative estimate of transition impacts, and builds on universally accepted methodologies and published materials describing the experience of other firms and industries. Potential impacts include:

- **Failed calls and texts**—For every 0.1% failure rate on an initial NPAC/SMS data migration, 622,000 telephone numbers are impacted, resulting in millions of failed calls and texts and raising customer care costs accordingly. Critical information is updated and redistributed in the NPAC/SMS over a million times per day, through mechanized interfaces and manually by trained expert LNPA staff. Even a small degree of error or delay introduced by a new vendor has ripple effects throughout the Industry.

- **Delayed or lost subscriber revenue**—A loss of system availability in the NPAC/SMS can prevent the porting of over 47,000 wireless consumers, representing the loss of up to $10 million in total subscriber contract value, per day. During periods of peak transaction activity—especially during Service Provider handset launches and major marketing campaigns—these figures can double.

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5 See attached white paper by Hal Singer, Navigant, Inc. Neustar has also estimated that the costs of migrating to a regional NPAC model with multiple vendors will raise transition and operations cost on affected providers by up to 50%. Today, only 29% of telephone numbers housed in the NPAC are served by Providers operating in only one region – making any regional transition effectively national in scope. Most importantly, dividing the NPAC along legacy geographic boundaries runs directly counter to industry trends of consumer mobility and IP network interconnection.

- **Blocked access to numbering resources**—Each day the NPAC/SMS is out of service may impede the activation of over 100,000 telephone numbers from the National Pooling process, severely limiting competitive Service Providers' ability to activate customers and maintain healthy inventories.

- **Inability to complete mergers & acquisitions, technology migrations, and customer launches**—Service degradations at the LNPA will delay or impede ongoing Industry activity that relies upon universal, accurate, and prompt delivery of network changes

- **Stalled innovation**—Ongoing efforts such as the use of the NPAC/SMS for migration to IP networks and the adoption of new NPAC/SMS interfaces, which reduce Industry cost and open new mechanisms for network optimization, will be jeopardized.

- **Degraded emergency preparedness**—Instability or inconsistency in LNPA service would ultimately impact public safety, in the form of inadequate operational expertise for disaster recovery and service restoration in times of greatest need.

- **Loss of consumer confidence in Number Portability**—Analysis of international number portability platforms indicates that as ports take longer or become less reliable, there is a detrimental impact on market competition, **threatening new entrants and smaller Service Provider**s. U.S. consumers are estimated to have gained in total a world-leading $8 -$10 billion per year in 2005-2010, based on the benefits of wireless number portability.[6] This exceptional result can be traced almost entirely to a fast, reliable, and nationally homogeneous consumer porting experience—all stewarded by a high-performing LNPA.

# Neustar's Proposal to Serve as the U.S LNPA 2015-2022

Neustar's **Full Combined Proposal for nationwide LNPA service** meets the immediate and long term interests of the telecommunications industry, and completely eliminates the risk of transition or segmentation. In addition to the highest levels of performance, most experienced and knowledgeable management team, and committed investments to support the Industry's future requirements, Neustar's proposal includes several improved financial terms:

- Nearly <sup>HIGHLY CONFIDENTIAL</sup> **in immediate savings** to Service Providers in year one of the new contract term

- **Fixed pricing model** that completely eliminates cost uncertainty

- <sup>HIGHLY CONFIDENTIAL</sup> **reduction in effective rate per transaction** over the course of the contract (depending upon adoption of NPAC/SMS-based IP interconnection)

- An additional <sup>HIGHLY CONFIDENTIAL</sup> **in incentive credits**, providing additional near-term value to the Industry aligned with increased value in the NPAC/SMS

- Over <sup>HIGHLY CONFIDENTIAL</sup> of additional costs absorbed in the contract, including current and future SOW's, reduced Direct Charges, elimination of bad debt exposure, and enhanced performance guarantees

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6 Hal Singer, Navigant Inc. Mr. Singer's research into the economic benefits of number portability finds that consumer utility degrades sharply as a factor of LNPA performance, including around longer versus shorter porting intervals.

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- **Zero marginal cost for usage,** encouraging innovation and incremental value

- **Up to** HIGHLY CONFIDENTIAL **in additional benefits** associated with NPAC/SMS innovations

- **No transition risk** for the Service Providers or for consumers

In conclusion, we thank the NAPM, LLC and the FCC for the opportunity to present Neustar's proposal to serve an extended term as the U.S. LNP Administrator. Neustar's selection will build upon the extraordinary value of U.S. Local Number Portability delivered to consumers, Service Providers, and state and federal regulators for the past 15 years. We are confident that our selection will guarantee continued performance, partnership, and innovation to the Industry and the FCC, and offers by far the greatest value and the lowest risk to Service Providers and their customers.

# 1.0 TECHNICAL FACTORS

## Why Neustar

- Depth and breadth of LNP Administration services exceeding stated requirements delivered by highly praised service team with unmatched expertise in all aspects of LNPA service

- Highly resilient and scalable NPAC/SMS with high availability, high reliability, and ample capacity to easily accommodate the requirements in the future

- Exceptional system performance, compliance, and customer satisfaction results generated due to unique experience and custom-built operational excellence program

# Security-Related Information

- Continued committed investments and innovations in recognition of growing Industry requirements, included at no cost

- Avoidance of costly and risky Industry-wide transition

During the next term, Service Providers will rely on the NPAC/SMS and the LNPA to acquire tens of millions of new subscribers, assign enough telephone number inventory to handle an explosion of machine-to-machine devices, and execute massive migrations to IP network technology. The LNPA is called upon to operate a highly complex service registry with thousands of stakeholders and billions of monthly interactions, act on the direct needs of Service Providers individually and in collaboration with one another, provide consultation and support for regulatory interests, and steward the policies associated with market competition and interconnection. This requires:

- **Technical expertise** sufficient to operate a geographically diverse, multi-layer platform architecture at the levels of security, stability, and flexibility reflective in light of the NPAC/SMS's strategic importance to the Industry

- **Unparalleled knowledge and expertise** in numbering and network administration across all telecommunications market segments to deliver the LNPA service with concrete understanding of our customer's business challenges

- **Operational excellence** approach sophisticated enough to maintain exceptional performance in a fast-changing environment—including regulatory policy, technology evolution, Industry change management, and shifting consumer demand

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Each one of these attributes by itself is essential to the U.S. LNPA's function, requiring a focused corporate commitment to high performance. Only in combination, however, do they provide the communications Industry with the full service and value that Service Providers and consumers require from the LNPA. Proposal Section 1.0 describes the various aspects of the service we have administered for fifteen years, highlighting Neustar's outstanding record of achievement against consumer expectations and Service Provider requirements. It also provides a survey of the immediate investments and long term innovations to which Neustar is committed for the next contract term, and describes our uniquely tailored methods and procedures for operational excellence and security, which will continue to provide comfort and confidence to the Industry and the FCC for the next decade.

## Outstanding Value from Performance and Innovation

Neustar's achievement against Industry expectations for availability, performance, and customer satisfaction have been exemplary, and distinguish our proposal from any other Respondent's. Over the last five years, there have been 11,340 distinct contractual service level measurements of the NPAC/SMS and the LNPA service— as displayed in Exhibit 1.0-1, Neustar has met or exceeded 11,333 of the Industry's requirements—a 99.94% success rate. These results come from years of hard-won experience in a unique technical and operational environment, and would not be easily duplicated by an untested vendor.
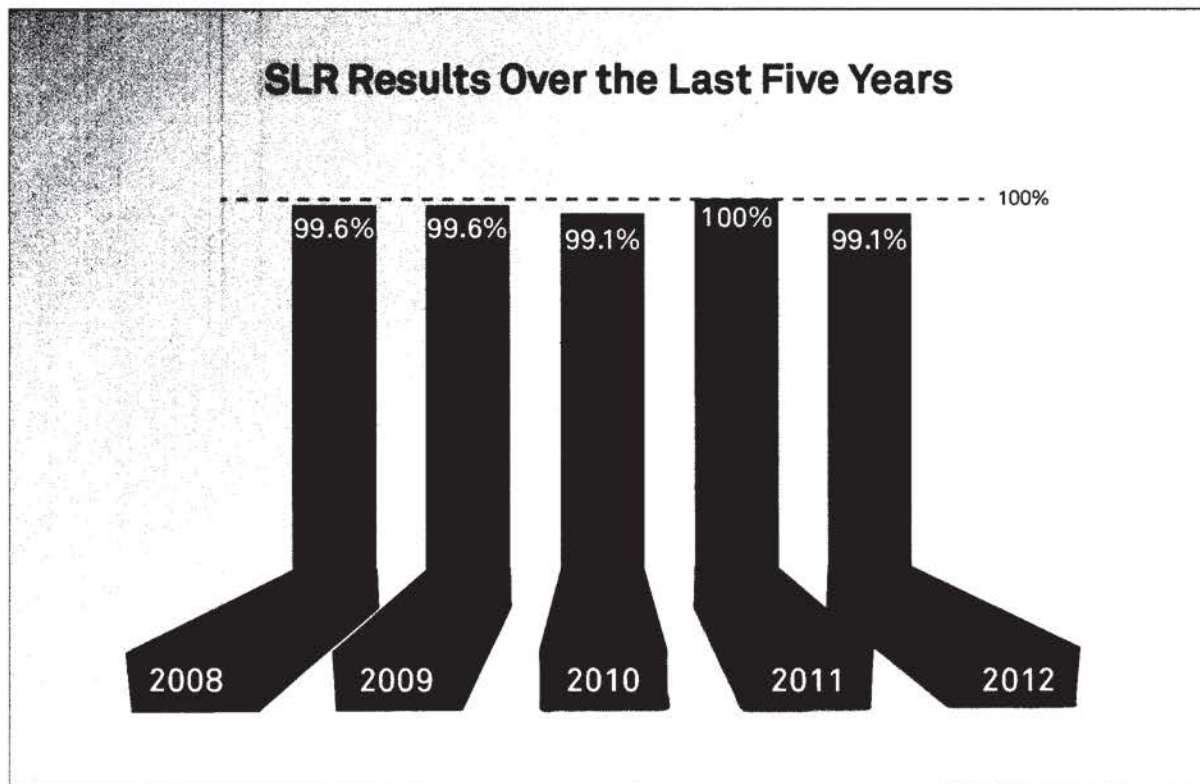


**SLR Results Over the Last Five Years**

100%

| 2008 | 2009 | 2010 | 2011 | 2012 |
| 99.6% | 99.6% | 99.1% | 100% | 99.1% |

166.npac2013

*Exhibit 1.0-1:* Neustar has satisfied U.S. LNPA SLRs 99.94% of the time during the last five years.

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For the next contract term, the NAPM, LLC has raised the bar on several key service level requirements. In light of the increasing strategic relevance of the NPAC/SMS to the Industry's essential business objectives over the next decade, Neustar enthusiastically agrees to the new SLRs and intends to continue its record of exceeding Service Provider expectations.

In some instances, adhering to the new requirements will require additional investment into the NPAC/SMS architecture. Neustar is by far the vendor best suited to meet these higher standards without any Service Provider disruption; given the complexity of the NPAC/SMS production environment and the impacts associated with altering it for any purposes, any other vendor would face enormous obstacles in doing so. As part of an extended contract, Neustar commits to making these investments at no additional cost to the Industry.

Table 1.0-1 provides an overview of the Industry's requirements, an assessment of Neustar's current performance against the metrics, and how Neustar intends to support any changes from current operations. In addition to the LNPA's contractual service level requirements, Neustar's performance is evaluated annually by representatives across the communications Industry, in terms of our teams' responsiveness, timeliness, neutrality, knowledge, clarity of communication, and urgency with which we address customer needs. Neustar uses the customer survey process to validate methods and procedures for operational excellence, set individual performance targets, and identify any areas where we can improve our service to the Industry. Neustar's recent scores from our many customers were spectacular—and 2012 was our best year ever with a score of 3.84 (out of a possible score of 4) across all measured categories.

## Table 1.0-1: SLR Overview

| New SLR | Description | RFP Requirements | Performance / Plans for 2015-2022 |
|---|---|---|---|
| | | | |
| 2 | Scheduled Service Unavailability | As Agreed by Parties | All SLRs met in 2012 |
| | | | |
| 4 | LSMS Broadcast Time | 3 second average response time—**decreased from less than 60 seconds** | Average 30 millisecond response time in 2012 |
| | | | |
| 6 | NPAC to LSMS Interface Rates | 99.9% of transactions maintain a min of 7 CMIP tps—**increased from 95%** | Average above 99.9% in 2012<br>*New for 2015:* Introducing additional application layer optimization to accommodate increased throughput |

| New SLR | Description | RFP Requirements | Performance / Plans for 2015-2022 |
|---|---|---|---|
| 8 | Unscheduled Backup Cutover Time | Maximum of 10 minutes to cutover to the backup site | All SLRs met in 2012 |
| 10 | Full Disaster Restoral Interval | Equal to or less than 6 hrs—**decreased from 48 hours** | All SLRs met in 2012 |
| 12 | User Problem Resolution, Average Speed of Answer | Minimum of 90% of calls answered by live operator within 10 secs (during normal business hours) | Average over 99% calls answered within 10 seconds in 2012 |
| 14 | User Problem Resolution, After Hours Callbacks | 99% callback within 15 minutes (outside normal business hours)—**decreased from 30 minutes** | Two SLRs missed in 2012, due to failure of after-hours voice mail system (replaced 3Q 2012) *New for 2015:* Migration to 24x7 Help Desk |
| 16 | Logon Administration | 99.5% of all approved request within 6 hrs of receipt—**changed from 12hrs and increased from 99%** | 100% compliance in 2012 |
| 18 | System Security Remedy Invalid Access Event | Remedy logon security permission errors immediately after user notification | All SLRs met in 2012 |

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| New SLR | Description | RFP Requirements | Performance / Plans for 2015-2022 |
|---------|-------------|------------------|-----------------------------------|
| 20 | Unscheduled Service Unavailability Notification —Upon Detection | Notify User within 15 minutes of detection | All SLRs met in 2012 |

In the next term, Neustar's proposal includes additional investments into all technology and people behind the LNPA service, including expanded help desk features and hours, and expanded options for User training. We also propose opening additional options for Service Provider testing, including full simulation and automated scenario testing in a full production mirror NPAC/SMS environment.

We have begun design and implementation for a fully redesigned NPAC Portal to consolidate the majority of existing online interfaces to the NPAC/SMS, including the Low-Tech Interface and NPAC.com. The Portal will offer, to all NPAC/SMS users, enhanced query and reporting functions to built on the foundation of Neustar's Port PS platform, in production today and relied upon by thousands of Service Provider users for intuitive access to complex number inventory data. More than anything, Neustar's selection will include a bedrock commitment in continued LNPA and NPAC/SMS performance in a time of unprecedented change for the Industry.

**Proposal Sections 1.1 LNP Administration Services and 1.2 NPAC/SMS Technical Design** describe in further detail the various aspects of the LNPA Service and the NPAC/SMS – including the unique custom-built methods we use to deliver high availability, scalability, performance, and user value. The sections also provide further detail regarding each of the enhancements to NPAC/SMS Neustar proposes for the next contract term.

## Proven Operational Excellence and Security

Neustar has exceptional record of performance in an environment of incredible complexity and precision as shown in Exhibit 1.0-2. We employ market-leading best practices in help-desk operations, billing assurance, system performance monitoring, disaster recovery, failover testing, and root cause analysis as validated and certified by external auditors each year. We have developed a proactive and predictive approach to all aspects of the LNPA service, operating with absolute rigor and precision to eliminate any and all risk to Service Provider data and access to essential functions. Our operational excellence program combines holistic performance monitoring and internal controls with comprehensive external auditing, Industry benchmarking, and reporting. Not content to simply adhere to the standards used by point solutions and internal platforms, we have customized Industry certifications (such as ISO-9001) to specifically address the unique needs of the NPAC/SMS.

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## Neustar's Exceptional Record of Performance

| Impressive Service | |
|---|---|
| **Overall Customer Satisfaction score (2012)** | **3.84/4.0** |
| *Provisioning Accuracy* | 99.9%+ |
| *First-call resolution* | 80%+ |
| *Compliance with performance metrics* | 99.9%+ |
| **Services Audits (2008–2012)** | |
| *Gateway Evaluation Process (GEP)* | 100% |
| *Data Center Operations (Article 14)* | Exceeds Industry Best Practice |
| *Benchmarking Process* | 100% |
| *New User Evaluation (NUE)* | Affirmative |
| *Local Number Portability Enhanced Analytical Platform (LEAP)* | 100% |
| *Intermodal Ported Telephone Number Identification (IPTN)* | 100% |
| **ISO 9001:2000 Certification (2008-2012)** | Certified with 0 non-conformities |
| | |
| **CEO-led operations review** | Monthly |
| **Disputes requiring FCC attention** | 0 |
| Robust System Specifications | |
| | |
| **Number of distinct Service Provider accounts** | 4,800+ |
| **Number of provisioning and distribution points (SOAs/LSMSs)** | 604/243 |
| **TNs under NPAC management** | 620 Million + |
| **Populated data fields in NPAC** | 5 Billion + |
| **Time to broadcast a change to the entire telecom network** | 7 seconds |
| **Billable transactions per year** | 500 Million + |
| **Actual interactions per year** | 12 Billion + |

145.npac2013

*Exhibit 1.0-2:* Nuestar's operational performance spans all aspects of the LNP ecosystem with superior results.

Given the significance and sensitivity of data provisioned in the NPAC/SMS and the severe consequences of a potential breach in the operation of the NPAC/SMS, Neustar follows a comprehensive "defense-in-depth" security program designed to mitigate current threats and anticipate the next generation of threats. Neustar employs Industry experts in cyber-security. We have brought the full weight of our corporate expertise to bear upon ensuring that all aspects of LNP Administration—database, network, facilities, and personnel—are equipped with the most advanced tools and best practices to protect Service Provider data and assets. Security-Related Information

Neustar's continued selection as the LNPA allows the Industry and the FCC to proceed with absolute confidence in the security of NPAC/SMS data and processes in the next term.

In the next contract term, Neustar proposes to expand the audits and certifications to which the LNPA is subjected on an annual basis—including an ISO 9001 alternative used exclusively by the telecommunications industry, TL 9000; and additional information security and business continuity audits. We also propose bringing the full weight of our unique experience in cyber-security and risk mitigation to bear by applying all relevant aspects of NeuCirt/SOC to the LNPA service. In combination, these investments on top of Neustar's already exception performance offer Service Providers and the FCC even greater confidence than today in the absolute reliability and security of the NPAC/SMS and its Administrator.

**Proposal Sections 1.3 Neustar's Approach to Operational Excellence for LNPA and 1.4 Neustar's Security** demonstrate our unmatched understanding of, and competency in, all operational performance aspects of our LNPA service and NPAC/SMS and comprehensive, multiple-layered "defense-in-depth" approach to physical, process, and platform security. The sections also describe in more detail the additional enhancements Neustar commits to pursuing for the next contract term.

## To Innovate or to Replicate?

The upcoming decade will be one of unprecedented change for Service Providers. The NAPM, LLC's RFP for post-2015 LNPA service recognizes the NPAC/SMS's relevance for PSTN-to-IP transition and as the current LNPA Neustar has already begun the process of facilitating collaboration and investing in technology to support this critical network evolution. But IP transition is only part of the Industry's challenge over the next decade – even as existing facilities are retired in favor of next-generation infrastructure, a massive wave of connected devices in the form of machine-to-machine is expected to surge provider networks, new market entrants with innovative business models will compete for resources and subscriber walletshare, and consumer demands for mobility, personalization and convergence will continue to rise. Each of these market developments has significant implications for telephone number administration and assignment, and the NPAC/SMS will be an essential focal point for Industry collaboration and innovation. In selecting Neustar, the Industry will know for certain that the foundation for Service Provider interconnection over IP networks is reliable and secure, allowing Service Providers to align their resources and focus their investment on the needs of the future.

In addition, in recognition of Neustar has described in this proposal several innovative enhancements to the NPAC/SMS for the next contract term, all designed to meet the challenges and opportunities of the next decade and to provide the highest possible value to the Industry and consumers. The NPAC/SMS's unique design creates the potential for significant cost savings, end-user service improvements, and revenue opportunities for Service Providers as their networks and subscribers adjust to a changing market.

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Table 1.0-2, excerpted from Proposal Section 1.5, provides a high-level view of potential NPAC/SMS enhancements, their associated market drivers, and the potential value to Service Providers of their adoption. For further detail, we have also included a series of white papers that explore several of the included enhancements items in greater detail. Through the use of ample annual SOW credits included in Neustar's proposal, the Industry can receive these enhancements at no additional cost.

**new**

### Table 1.0-2. Potential NPAC/SMS Enhancements

| NPAC Roadmap Item | Value to Service Providers |
|---|---|
| | |
| Consolidated POIs and Network-Aware Provisioning | • Avoids need for central office / point-of-interconnect in each LATA, in favor of optimal network design unconstrained by PSTN geographic rules |
| | • Efficient roll-out of VoLTE networks based on dynamic route provisioning as subscribers move between 4G/3G coverage areas |
| | |
| Machine-2-Machine Administration | • Accommodation for significantly increased demand for TN resources, deferred area code exhaust |
| | • Increase value of M2M devices on Service Provider networks by maximizing interoperability options |
| | |
| TN Certificate Authority | • Increased security for TN-addressed messages over the internet (e.g. Caller ID, mobile finance) |
| | • Opportunities for Service Providers to differentiate in the market for mobile Internet identity services |
| | |
| Equipment Identity/Stolen Handset Registry | • Reduced fraud due to stolen devices (13M estimated lost/stolen smartphones in 2013) |
| | • Accelerated compliance with FCC requirements |
| | • Leverages existing NPAC infrastructure and interfaces |
| | |

The alternative to selecting Neustar for an extended contract term is to assume the cost and risk of an unprecedented Industry-wide transition. Neustar has estimated the potential costs to the Industry's thousands of constituents of a transition to a new LNPA vendor as reaching $719M in the first year—arising not only from the extensive development and testing required to migrate thousands of Service Providers to a brand new platform on an aggressive and fixed schedule, but also from the certain impacts to consumers and Service Providers from missed calls and texts, delayed porting schedules, postponed network upgrade activities, and impeded access to new telephone number inventory. The best possible outcome of such a transition, after all costs were incurred and risks were realized, would be an LNPA service that approximates the level of service the Industry is currently receiving today from Neustar – and a great deal of energy and expense that could have been spent focusing on the future would instead have resulted in, at best, a replication of the status quo.

**Proposal Section 1.5 Future NPAC/SMS** Innovations describes Neustar's proposed innovations, above and beyond the requirements of the RFP and subject to future discussion with the Industry. **Proposal Section 1.6 Transition and Implementation** describes Neustar's view of the impacts and pitfalls of NPAC/SMS transition to one or more alternate vendors. By selecting Neustar as the LNPA vendor for the next contract term, the Industry will continue to receive seamless outstanding performance AND committed partnership in innovation, without subjecting the Industry and consumers to an unnecessary and extraordinary risk and expense of an LNPA vendor transition.

Throughout our proposal, we have highlighted several items to assist evaluators in understanding the differentiators of Neustar's solution.

**The Neustar Difference**—highlights the elements of our proposal that are unique to Neustar's LNPA service, whether because they will not transfer to an alternate vendor with the service or because they represent expressions of Neustar's unique experience and management team.

**New for the Next Term**—identifies what we propose in the next term, different from what Users experience today from the NPAC/SMS. This distinction includes many items of which the NAPM is already aware, since they were initiated during our current tenure but are not yet in the production system.

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# 1.1 LNP Administration Services

## Why Neustar

- Fully compliant service in place today provided by personnel possessing hundreds of man-years of relevant numbering and porting experience

- Proactive solutions addressing future needs of our customers while assuring all our constituents of high-quality service delivery at stellar performance levels

- Demonstrated record of continuous improvement in processes and technologies that deliver superior service

## New for the Next Term

- Enhanced customer experience via the new NPAC Portal which will provide Web 2.0 features like "Chat with an Expert"

- All NPAC registration and user profile forms will be available for submission via the NPAC portal in a secure manner

- A new NPAC/SMS test capability, available via the NPAC Portal, offering both predefined and customized test cases, to allow Service Providers to test when convenient

- Dedicated 24x7x365 customer support team

- Customized User profile development process based on a set of hierarchical questions

At first glance, the LNPA role may appear straight-forward: the NPAC must always be available and able to process hundreds of millions of transactions each year. The system is designed to be unaligned with any specific technology or service segment and the administration is required to be neutral. The NPAC is a critical part of the infrastructure of the North American communications Industry, needed to support the billions of interactions that occur each day. The LNPA is the bedrock upon which the Industry competition mandated by the Telecommunications Act of 1966 is built. Neustar, in collaboration with the Industry, has surpassed the original mandate to design, develop, operate, and maintain a compliant NPAC/SMS and together has transformed the NPAC into a powerful tool—the NPAC today is much more than merely processing bytes of data.